

**UNIVERSITI TEKNOLOGI MARA**

**FEA OF SFRC THREE RIBBED WALL PANEL**

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Dissertation submitted in partial fulfillment of the requirements  
for the degree of  
**MSc in Civil Engineering (Structure)**

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## **AUTHOR'S DECLARATION**

I declare that the work in this dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This topic has not been submitted to any other institution for any masters qualification.

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
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## **ABSTRACT**

This finite element study was carried out to investigate the steel fibre reinforced concrete with three (3) ribbed wall (SFRC-3RW) panel containing reinforced wire mesh (BRC) subjected to axial and eccentric loading also its load bearing response behavior. A ribbed wall with steel reinforced was modeled with finite element analysis software LUSAS 14.7 using three dimensional modeling and non-linear finite element analysis. The SFRC-3RW panel was subjected to axial and eccentric loading to observe and investigate its buckling effect, the load bearing response behavior and compare with SFRC Plain Wall (PW). The SFRC-3RW and PW was using concrete grade 30 with 0.5% steel fibre content. The SFRC-3RW ultimate load bearing is 581 kN with maximum compression vertical and lateral displacement by 2.36 mm and 6.16 mm respectively compared to SFRC-PW with eccentric loading (SFRC-PWe) is 577 kN with maximum compression vertical and lateral displacement by 2.31 mm and 8.24 mm. The reduction in concrete volume and ultimate load capacity were 20% and 0.33% from SFRC-PWe which SFRC-3RW save the concrete amount and given higher load capacity compared to SFRC-PWe. It can be concluded that the load bearing capacity for SFRC-3RW with BRC is acceptable and can withstand vertical pressure also reducing the amount of concrete usage.

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